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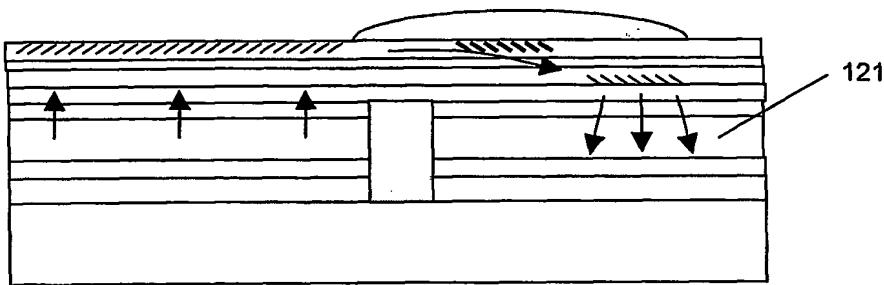
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(54) Title: OPTOELECTRONIC BIOCHIP



(57) Abstract: The present invention provides a biochip for testing biological substances comprising a plurality of binding sites, optical means for determining a specific binding event at each binding site, wherein the plurality of binding sites and the means for determining a specific binding event at each binding site are monolithically integrated into a single chip which is electrically powered and produces electrical signals in response to binding events at each binding site. The means for determining a specific binding event can include a micro-cavity light source formed in a semiconductor layer and a photodetector formed in the same semiconductor layer and further include a grating assisted vertical planar waveguide coupler for in-situ monitoring hybridisation dynamics at each binding site via associated changes in refractive index. The invention further provides a method of manufacturing a biochip containing light sources, photodetectors, binding sites and optical means for determining a specific binding event at each binding site wherein said light sources, photodetectors, binding sites and optical means for determining a specific binding event at each binding site are produced by processing a single planar substrate in a sequence of deposition, photolithography and etching steps.